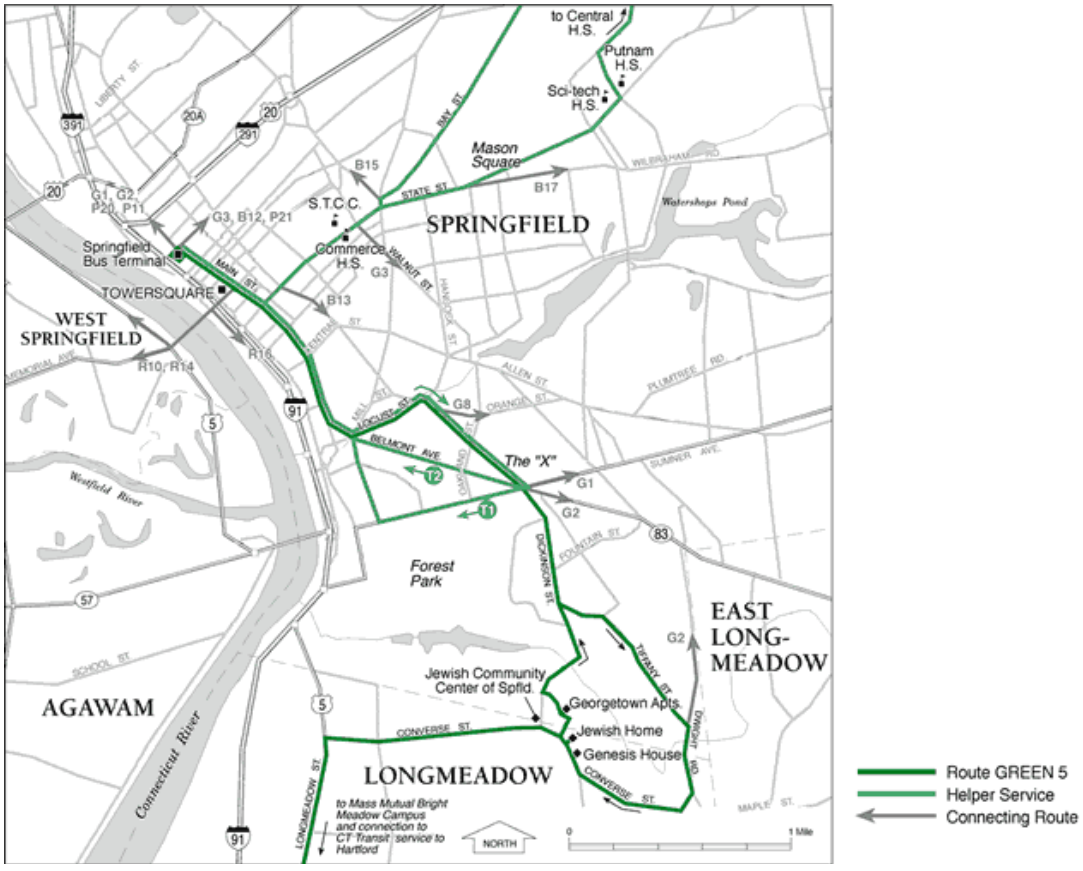
Route Evaluation

5 DICKINSON - JEWISH HOME / LONGMEADOW / SBT

Service Design. Route 5 Dickinson - Jewish Home / Longmeadow / SBT is a radial route connecting downtown Springfield and the Springfield Bus Terminal (SBT) with south Springfield and the Mass Mutual campus in Enfield, CT[1].

FIGURE 1 – ROUTE MAP



[1] *Note that the route map (Figure 1) also shows "helper" services scheduled to serve particular destinations at certain time. These helper trips are not included in the route evaluation.*

System Interaction and Transfer Opportunities. Route 5 offers connections to the rest of the PVTA system through connections available at SBT. In addition, there are opportunities for on-street transfers at several locations along the route, including:

- **Route 1** for local service within Springfield and to Chicopee
- **Route 2** for local service within Springfield and to East Longmeadow
- **Routes 3 and 8** for local service within Springfield
- **Route 10** for local service to West Springfield and Westfield
- **Route 11** for limited-stop service to Holyoke Community College
- **Route 12** for express service to Hampden County Correctional Facility at Stonybrook
- **Route 14** for local service to West Springfield and Agawam
- **Route 17** for local service within Springfield with one trip to Wilbraham
- **Routes 20 and 21** for service to Chicopee and Holyoke

In Enfield, transfer opportunities include:

- **CT Transit Routes 5 and 13** for service to Hartford, CT

Alignment/Service Patterns. Route 5 has two primary variants. During peak periods, buses operate between the SBT and the Mass Mutual campus in Enfield with connections in Enfield to Hartford. During the off-peak, Route 5 offers "short turn" service to the Jewish Geriatric Services campus on Converse Street.

From SBT, Route 5 operates south on Main Street and Locust Street to Dickinson Street;the bus travels through The "X" continuing on Dickinson Street to Tiffany Street. At this location, the route diverges to create a one-way loop; southbound trips travel on Tiffany Street and Dwight Road to Converse Street and the Jewish Geriatric Services campus. Buses serving Enfield continue along Converse Street to Longmeadow Street, terminating at Mass Mutual on Bright Meadow Boulevard. Short turn buses return on the western edge of the loop and head back to Dickinson Street via Williamsburg Drive and Jamestown Drive.

Service Schedule. Route 5 provides 12 round trips from SBT on weekdays between 6:15 AM and 6:15 PM; four of the 12 weekday trips turn at the Jewish Geriatric Services Campus. On Saturdays, Route 5 has eight round-trips between 6:15 AM and 6:15 PM. All Saturday trips end at the Jewish Geriatric Services campus. Weekday service has a prevailing service frequency of every 60 minutes, though some trips are irregularly spaced, resulting in more or less than hourly service. Saturday service is primarily available every 90 minutes, with two morning trips and two afternoon trips spaced one hour apart.

FIGURE 2 – SCHEDULE OVERVIEW

SERVICE DAY	SPAN OF SERVICE	TYPICAL FREQUENCY (PEAK / OFF-PEAK)	DAILY TRIPS NORTHBOUND / SOUTHBOUND
Weekday	6:15 AM – 6:15 PM	60 (Irregular)	12 / 12
Saturday	7:30 AM – 5:40 PM	90 (Irregular)	8 / 8

Source: PVTA route schedules.

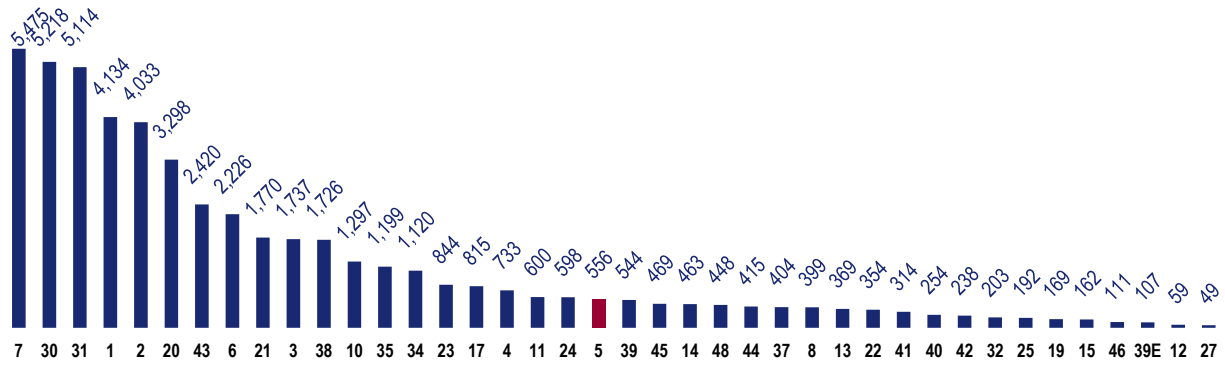
Ridership by Service Day. Route 5 carries 556 daily passengers or 23.2 passengers per trip on an average weekday. This is almost identical to the system-wide average of 23.4 weekday passengers per trip (see Figure 3 and Figure 4). Saturday ridership is significantly lower at 175 daily passengers or 11 passengers per day, compared to the PVTA Saturday average of 20.9 passengers per trip.

FIGURE 3 | RIDERSHIP STATISTICS*

SERVICE DAY	AVERAGE RIDERSHIP PER DAY	AVERAGE RIDERSHIP PER TRIP	
	Route 5	Route 5	System Avg
Weekday	556	23.2	23.4
Saturday	175	10.9	20.9

** Statistics reflect service during the academic calendar. Source: PVTA performance data.*

FIGURE 4 – AVERAGE WEEKDAY RIDERSHIP



Ridership by Stop. Route 5 is a radial route and most riders use it to get in and out of downtown Springfield and to transfer to other PVTA routes. Ridership activity on Route 5 is heaviest at Springfield Bus Terminal, followed by the intersection of Main and Harrison Streets, where passengers can transfer to Routes 10, 14, and 16 (see Figure 5 and Figure 6).

Outside of downtown Springfield, three stops generate the majority of Route 5's ridership. Together, these three stops account for more than 30% of the route's northbound boardings:

- Converse Street and the Ruth House (Jewish Geriatric Services campus)
- Dickinson and Sumner Streets, which serve a retail and restaurant cluster in The "X," and provides transfer opportunities between Route 5 and Route 1 and 2.
- Mill and Locust Streets provides transfer opportunities between Route 5 and Route 8.

Ridership activity is extremely low along Converse Street and Longmeadow Street, between the Jewish Geriatric Services campus and the Mass Mutual campus in Enfield. Low ridership reflects the low-density residential neighborhoods that line these corridors, as well as the lack of marked bus stops in the corridor. Passengers wishing to catch a bus along this segment of Route 5 must flag the vehicle down as it approaches.

Note the data shown in Figures 5 and 6 are for the northbound (or inbound) travel only. Thus, ridership for the eastern segment of the loop off of Dickinson Street (Converse Street at the Jewish Geriatric Service to Tiffany Street at Dickinson) is not shown.

FIGURE 5 – WEEKDAY NORTHBOUND RIDERSHIP BY STOP GRAPH

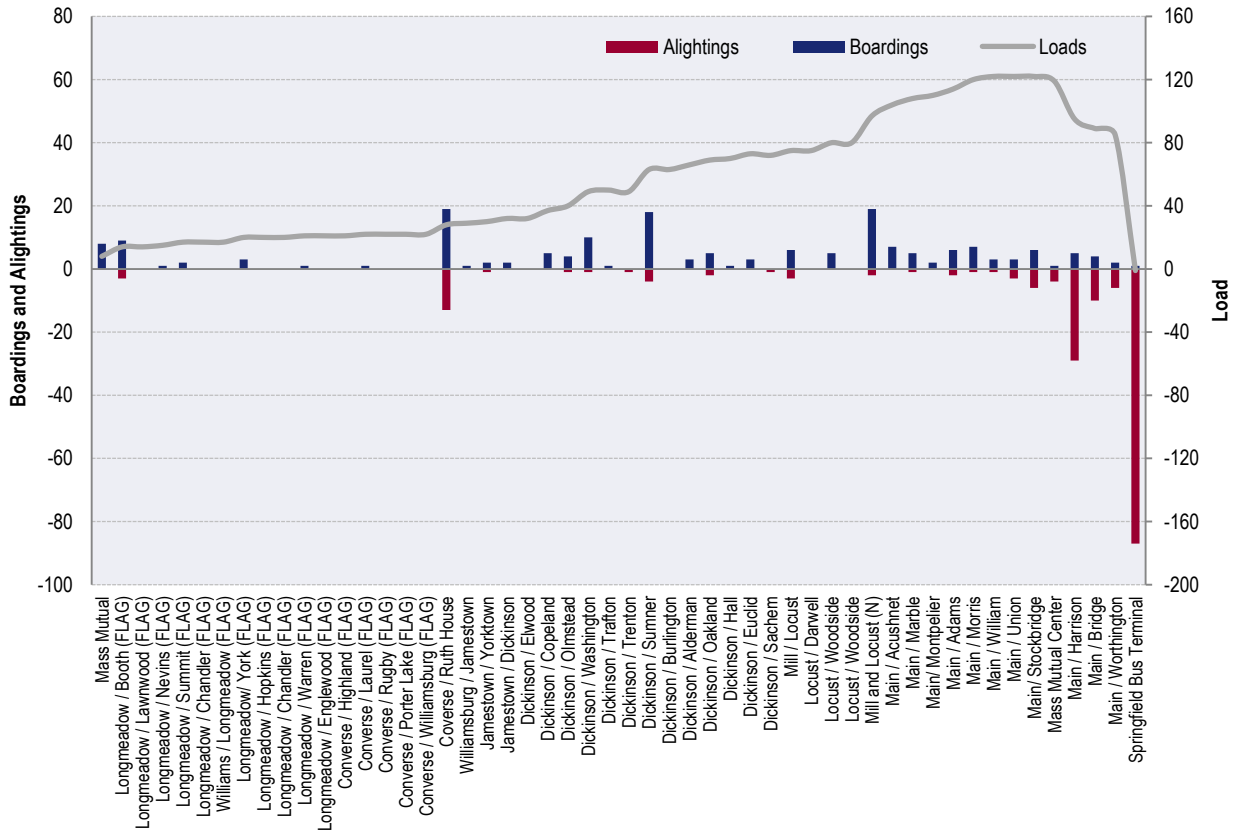
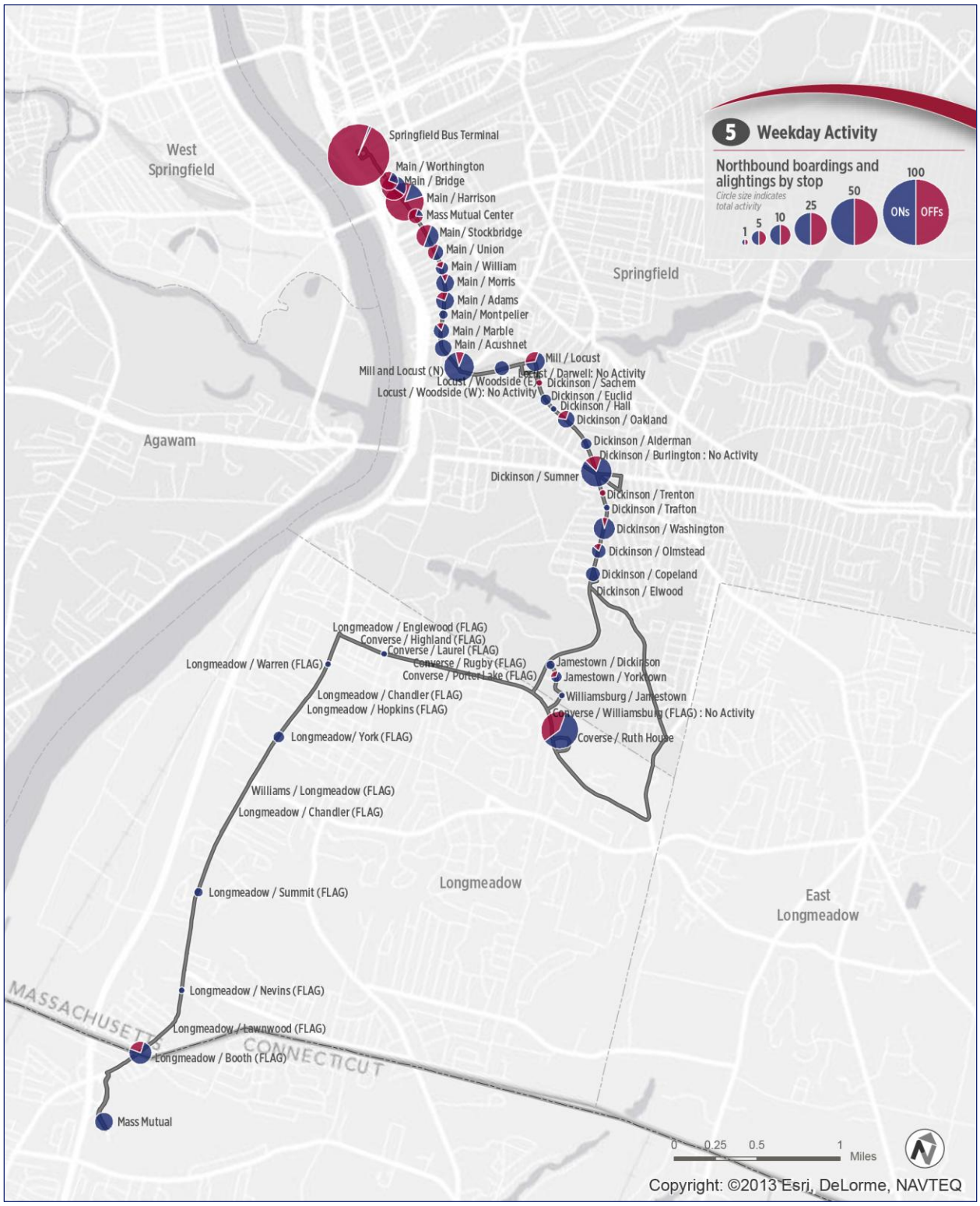


FIGURE 6 – WEEKDAY NORTHBOUND RIDERSHIP BY STOP MAP



Weekday Ridership by Trip. Weekday trips on Route 5 carry an average of 23.2 riders per trip, though ridership varies throughout the day. Northbound ridership has three peaks in the morning, mid-day, and evening, while southbound ridership is highest during the mid-afternoon (see Figures 7 and 8). Weekday ridership also suggests a peak directional pattern, with more people traveling inbound to Springfield in the morning and outbound in the afternoon. On average, no weekday trips in either direction carry fewer than 5 passengers per trip. Ridership fluctuations appear to be more strongly associated with time of day than by routing variant.

On weekdays, the highest average maximum loads for Route 5 are 18 passengers in the northbound direction and 21 passengers in the southbound direction. The loads are below the typical 40-passenger seating capacity of a 40' transit vehicle, which indicates that standees are rare on Route 5.

FIGURE 7 – WEEKDAY NORTHBOUND (INBOUND) RIDERSHIP BY TRIP

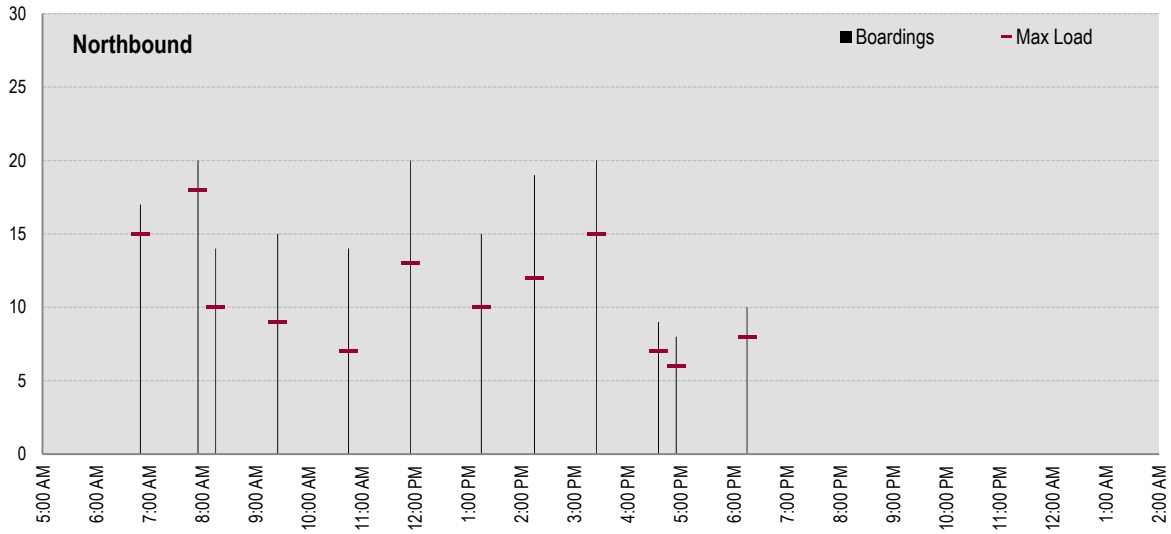
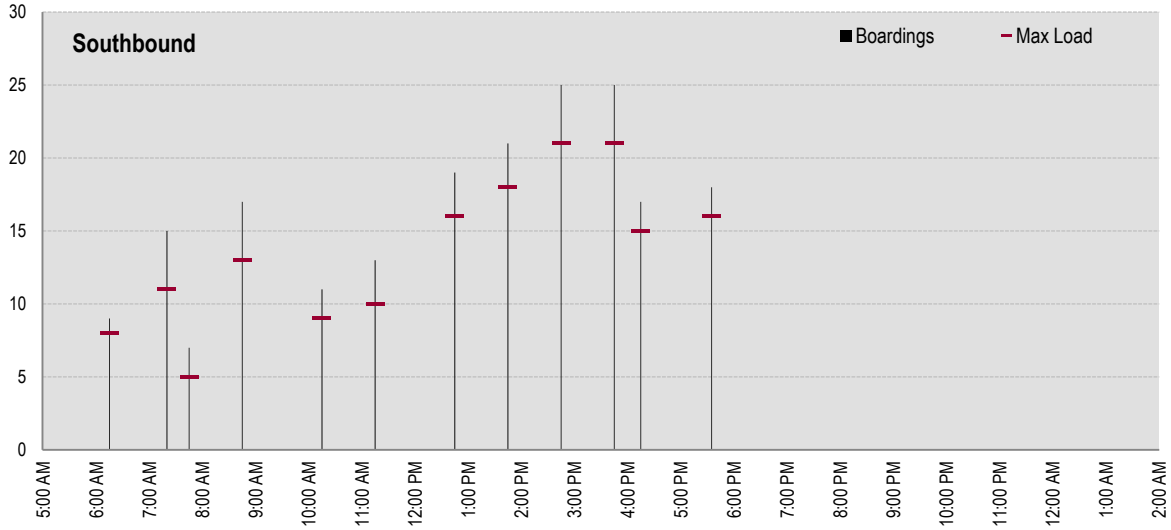


FIGURE 8 – WEEKDAY SOUTHBOUND (OUTBOUND) RIDERSHIP PER TRIP



Saturday Ridership by Trip. Saturday trips on Route 5 carry an average of 11 riders (see Figures 9 and 10). Demand peaks around noon in northbound direction, and in the 8:00 AM hour for southbound trips. A single high ridership trip in the mid-day (12:00 PM) in the northbound direction may suggest a demand for greater service frequency during this part of the day when trips are spaced 90 minutes apart.

Average maximum loads are below 20 passengers for all Saturday trips on Route 5; there are no capacity issues on the Saturday service.

FIGURE 9 – SATURDAY NORTHBOUND RIDERSHIP BY TRIP

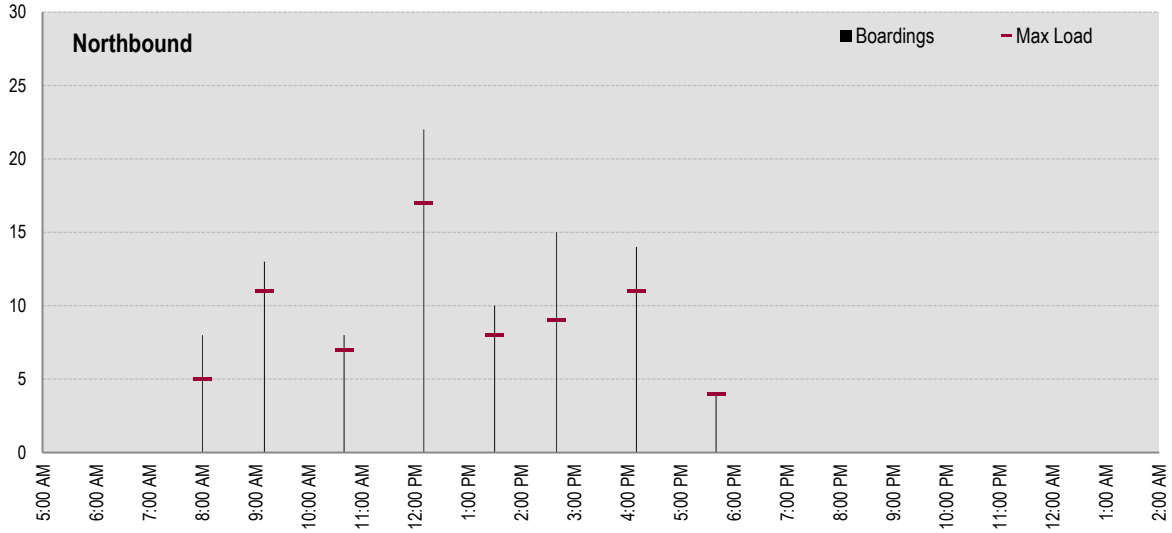
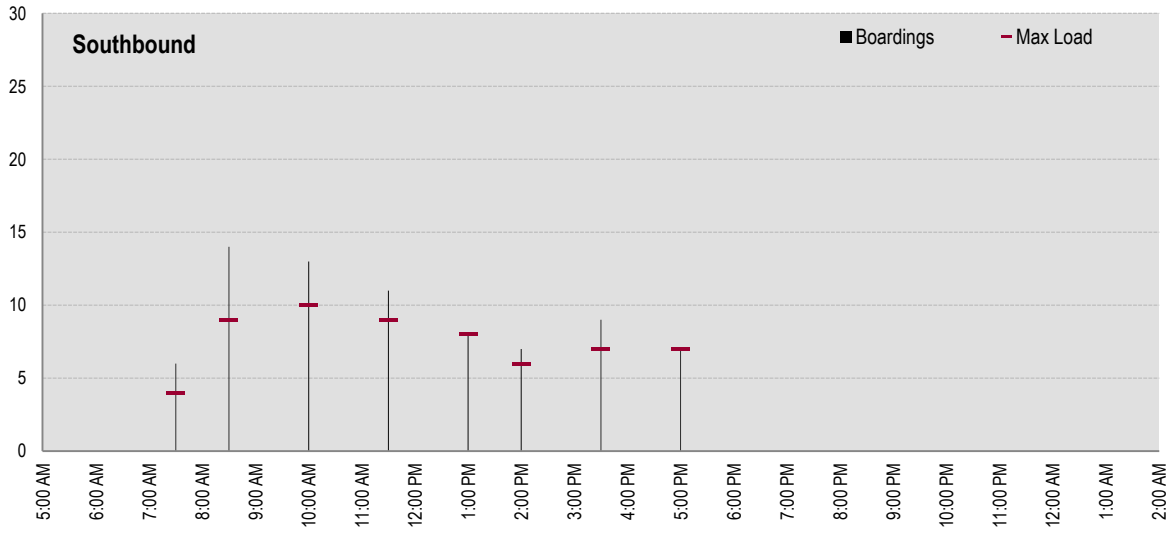


FIGURE 10 – SATURDAY SOUTHBOUND RIDERSHIP PER TRIP



Performance. Route 5 has a weekday operating cost of $2.61 per passenger, 16 % lower than the system average (see Figure 11). Weekday ridership per revenue hour and revenue mile are also slightly below the PVTA averages for these metrics.

Saturday service performance is significantly lower than the system average for both weekday service performance for all metrics, including operating cost per passenger, passengers per revenue vehicle hour and passengers per revenue vehicle mile.

FIGURE 11 | PERFORMANCE MEASURES

PERFORMANCE MEASURE	WEEKDAY		SATURDAY	
	ROUTE 5	SYSTEM AVG	ROUTE 5	SYSTEM AVG
Operating Cost per Passenger	**$1.53**	$2.05	**$3.93**	$3.54
Passengers per Revenue Vehicle Hour	**32.4**	32.9	**16.0**	31.5
Passengers per Revenue Vehicle Mile	**2.5**	2.6	**1.2**	2.4

Source: PVTA performance data.

FIGURE 12 – WEEKDAY OPERATING COST PER PASSENGER

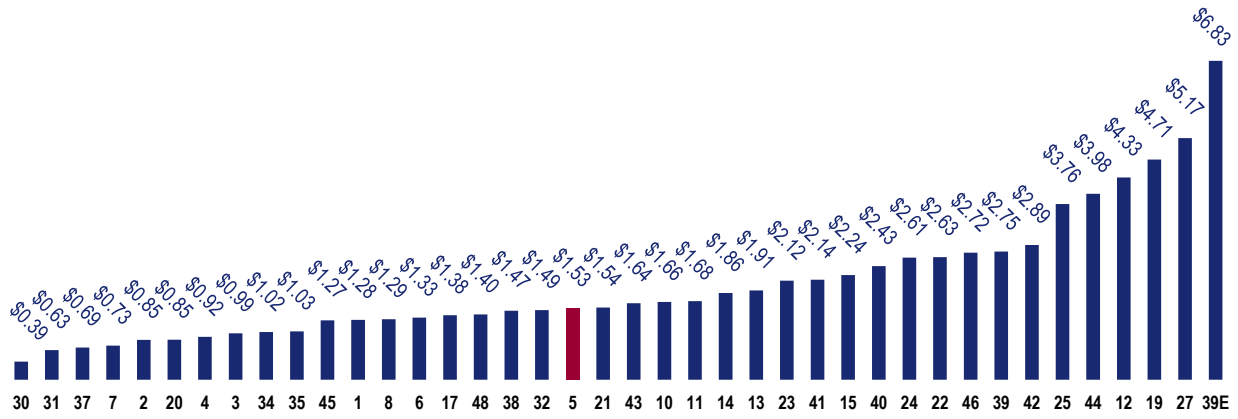
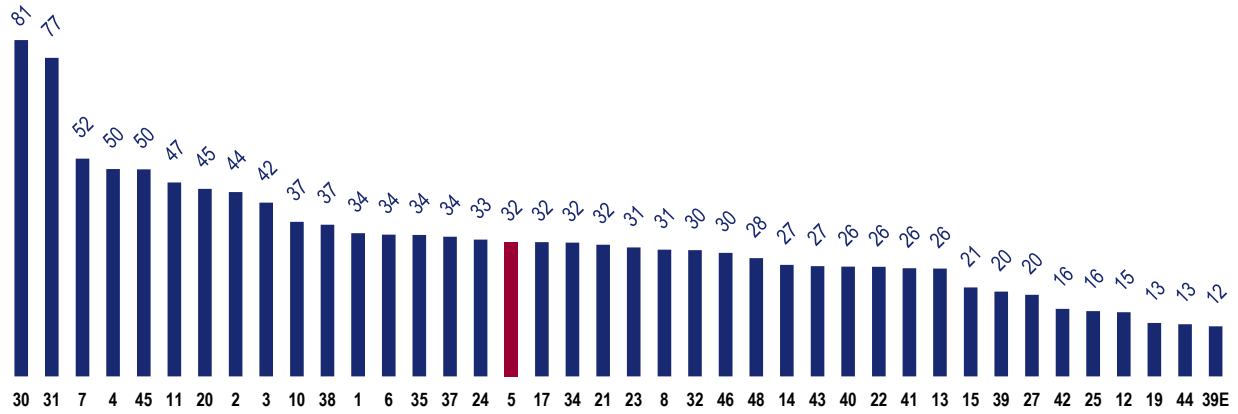


FIGURE 13 – WEEKDAY PASSENGERS PER REVENUE HOUR



SERVICE IMPROVEMENT OPTIONS

Route 5 has close to average service performance for most metrics on weekdays, but generally performs worse than other PVTA routes on Saturday. Service improvement options include:

- **Truncate Route 5 at The "X."** Route 5 provides a very similar service to Route 1 and 2 between The "X" and SBT. Route 1 and 2 have much higher service frequency than Route 5, and when taken together result in a service frequency of approximately every 5 minutes during many parts of the day. Truncating Route 5 at The "X" would substantially shorten the route, allowing for fewer vehicles or greater service frequency in the remainder of the route. Route 5 passengers wishing to travel beyond The "X" could transfer to Route 1 or 2 with a minimal wait time.
- **Create super stop at the "X".** The "X" is a major landmark in Springfield that many riders and residents are familiar with. Several PVTA routes also travel through the X, creating an opportunity for an on-street transfer location that could be developed into a super stop or mini transit hub. This location may also be a terminal point for potential cross-town service that travels through the eastern end of Springfield.
- **Operate service to the Mass Mutual campus as an express route operating along I-91.** Using Route 5 to serve the Mass Mutual campus in Enfield CT is appealing because it creates an outer end 'anchor' for the route and helps balance demand. Mass Mutual is also a major employer with offices in both Springfield and the greater Hartford area. The campus in Enfield employees some 1500 employees, most of whom work between 9 AM and 5 PM and an estimated 40% of whom live in western Massachusetts. The challenge for current potential riders is that the travel time between SBT and Mass Mutual is long (approximately 40 minutes) and even longer for people traveling to Hartford. Instead of adding Mass Mutual to Route 5, PVTA could create a new express service to Mass Mutual (and potentially the Bradley International Airport and/or downtown Hartford) traveling via I-91. This would make the route faster (approximately 15 minutes from origin to destination) and more direct, which would help attract riders. There are a handful of riders boarding Route 5 in Longmeadow, but these riders may be better served through other routes.
- **Coordinate service along Main Street between Locust Street and SBT.** Consistent with service between SBT and the X, there are many routes that travel along Main Street between SBT and Locust Street. There are likely opportunities to better coordinate this service by creating a super stop at the intersection of Main and Locust Street (see below), terminating some routes at this location and extending some of the northern routes through to this location.
- **Develop transit super stop or mini-hub at southern end of Main Street near the intersection of Locust Street.** As discussed above, several routes (including Routes 1, 2, 5 and 8) travel south on Main Street to Locust Street. This intersection may be a good location to develop a super stop to support on-street patterns, reduce bus congestion on Main Street and shorten trips for some riders.
- **Replace flag stops with marked bus stop sighs.** Flag stops may be convenient for users who are familiar with the system, but make using the service difficult for prospective riders who may not understand that service is available. Bus stop signs and passenger amenities help increase awareness of a transit service in a corridor and create an opportunities to post additional route, fare, and schedule information at selected stops.
- **Stagger schedules or diversify routing between The "X" and SBT.** If Route 5 is not truncated at The "X," staggering the schedules of Route 1, 2, 5, and 8 (particularly on Saturday)

can help increase service frequency in their common corridor (Main Street). Alternatively, some of the routes can be shifted to Maple Street to increase service coverage and reduce vehicle "stacking" on Main Street.